WHAT IS CLAIMED IS:

1. A Group-III nitride semiconductor device comprising a crystal substrate, an electrically conducting Group-III nitride semiconductor ($Al_XGa_YIn_{1-(X+Y)}N$: $0 \leq X < 1$, $0 < Y \leq 1$ and $0 < X+Y \leq 1$) crystal layer vapor-phase grown on the crystal substrate, an ohmic electrode and an electrically conducting boron phosphide crystal layer provided between the ohmic electrode and the Group-III nitride semiconductor crystal layer, said ohmic electrode being disposed in contact with the boron phosphide crystal layer.

2. The Group-III nitride semiconductor device as claimed in claim 1, further comprising a non-crystalline layer containing boron and phosphorus provided between the Group-III nitride semiconductor crystal layer and the boron phosphide crystal layer.

3. The Group-III nitride semiconductor device as claimed in claim 1, wherein the boron phosphide crystal layer comprises an undoped electrically conducting layer not having an impurity intentionally added thereto, said boron phosphide crystal layer being of the same conduction type as the group-III nitride semiconductor of the group-III nitride semiconductor crystal layer.

4. The Group-III nitride semiconductor device as claimed in claim 2, wherein the boron phosphide crystal layer comprises an undoped electrically conducting layer not having an impurity intentionally added

thereto, said boron phosphide crystal layer being of the same conduction type as the group-III nitride semiconductor of the group-III nitride semiconductor crystal layer.

5. The Group-III nitride semiconductor device as claimed in claim 1, wherein the boron phosphide crystal layer is provided on a {0.0.0.1.}-surface of the Group-III nitride semiconductor crystal layer and the boron phosphide crystal layer is an electrically conducting {111}-crystal layer.

6. The Group-III nitride semiconductor device as claimed in claim 2, wherein the boron phosphide crystal layer is provided on a {0.0.0.1.}-surface of the Group-III nitride semiconductor crystal layer and the boron phosphide crystal layer is an electrically conducting {111}-crystal layer.

7. The Group-III nitride semiconductor device as claimed in claim 1, wherein the inside of the boron phosphide crystal layer contains a stacking fault or a twin with the twin boundary being a {111}-plane face along the <111>-crystal azimuth of the boron phosphide crystal layer.

8. The Group-III nitride semiconductor device as claimed in claim 2, wherein the inside of the boron phosphide crystal layer contains a stacking fault or a twin with the twin boundary being a {111}-plane face along the <111>-crystal azimuth of the boron phosphide crystal layer.

9. The Group-III nitride semiconductor device as claimed in claim 1, wherein total density of threading dislocations and misfit dislocations inside the boron phosphide crystal layer is $1\times10^4/cm^2$ or less.

10. The Group-III nitride semiconductor device as claimed in claim 2, wherein total density of threading dislocations and misfit dislocations inside the boron phosphide crystal layer is $1\times10^4/cm^2$ or less.

11. A method for producing a Group-III nitride semiconductor device,

said device comprising a crystal substrate, an electrically conducting Group-III nitride semiconductor ($Al_XGa_YIn_{1-(X+Y)}N$: $0\leq X<1$, $0<Y\leq1$ and $0<X+Y\leq1$) crystal layer vapor-phase grown on the crystal substrate, an ohmic electrode and an electrically conducting boron phosphide crystal layer provided between the ohmic electrode and the Group-III nitride semiconductor crystal layer, said ohmic electrode being disposed in contact with the boron phosphide crystal layer,

said method comprising forming the Group-III nitride semiconductor crystal layer and the boron phosphide crystal layer on the crystal substrate by metal-organic chemical vapor deposition.

12. A light-emitting diode comprising the Group-III nitride semiconductor device as claimed in claim 1, said light-emitting diode having a pn-junction double heterojunction structure.

13. A light-emitting diode comprising the Group-III nitride semiconductor device as claimed in claim 2, said light-emitting diode having a pn-junction type double heterojunction structure.

14. A light-emitting device comprising a crystal substrate, a lower clad layer comprising an electrically conducting Group-III nitride semiconductor ($Al_XGa_YIn_{1-(X+Y)}N$: $0 \leq X < 1$, $0 < Y \leq 1$ and $0 < X+Y \leq 1$) crystal layer of a first conduction type vapor-phase grown on the crystal substrate, a first ohmic electrode of said first conduction type, an electrically conducting boron phosphide crystal layer of said first conduction type provided between the first ohmic electrode and the lower clad layer, said first ohmic electrode being disposed in contact with a portion of the boron phosphide crystal layer of said first conduction type, a light-emitting layer disposed on a portion of the boron phosphide crystal layer of said first conduction type not occupied by the first ohmic electrode, an upper clad layer comprising a Group-III nitride semiconductor layer of a second conduction type disposed on said light-emitting layer, a second ohmic electrode of said second conduction type, and an electrically conducting boron phosphide crystal layer of said second conduction type provided between the second ohmic electrode and the upper clad layer, said second ohmic electrode being disposed in contact with the boron phosphide crystal layer of said second conduction type.

15. The light-emitting device as claimed in claim 14, further comprising a non-crystalline layer containing boron and phosphorus provided

between at least one of (i) the lower clad layer and the boron phosphide crystal layer of said first conduction type and (ii) the upper clad layer and the boron phosphide crystal layer of said second conduction type.

16. A light-emitting device comprising a crystal substrate, a lower clad layer comprising an electrically conducting Group-III nitride semiconductor ($Al_XGa_YIn_{1-(X+Y)}N$: $0 \leq X < 1$, $0 < Y \leq 1$ and $0 < X+Y \leq 1$) crystal layer of a first conduction type vapor-phase grown on the crystal substrate, a first ohmic electrode of said first conduction type, an electrically conducting boron phosphide crystal layer of said first conduction type provided between the first ohmic electrode and the lower clad layer, said first ohmic electrode being disposed in contact with a portion of the boron phosphide crystal layer of said first conduction type, a light-emitting layer disposed on a portion of the boron phosphide crystal layer of said first conduction type not occupied by the first ohmic electrode, an upper clad layer comprising a Group-III nitride semiconductor layer of a second conduction type disposed on said light-emitting layer, and a second ohmic electrode of said second conduction type disposed on said upper clad layer via an upper boron phosphide layer of said second conduction type and a lower boron phosphide layer of said first conduction type, wherein both upper and lower boron phosphide layers contact said upper clad layer.

17. The light-emitting device as claimed in claim 16, wherein said upper and lower boron phosphide layers form a pn junction.

18. The light-emitting device as claimed in claim 16, further comprising a non-crystalline layer containing boron and phosphorus provided between the lower clad layer and the boron phosphide crystal layer of said first conduction type.